

Mephentermine and Intravenous Fluids for the Prevention of Hypotension Associated with Spinal Anesthesia

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In clinical anesthesia many useful and established routines of practice lack the support of published prospective studies. In this report we evaluate one such routine: the usefulness of intravenous fluids and mephentermine (Wyamine) in preventing the development of hypotension during transurethral resection of the prostate (TURP) under spinal anesthesia. Spinal anesthesia frequently is selected as it permits early recognition of accidental bladder perforation and dilutional hyponatremia. Spinal anesthesia, however, may cause hypotension, and this is particularly hazardous to patients undergoing prostatic surgery since many have coronary artery disease or cerebrovascular insufficiency.

PATIENTS AND METHODS

The series studied comprised 100 men having elective TURP in the lithotomy position. Their mean age and pre-anesthetic mean arterial blood pressure were 69 years and 103 mm Hg, respectively; when the patients were later studied in four groups, these data did not differ significantly among the four groups. Each patient received nothing by mouth after midnight prior to the day of operation and meperidine (25 to 75 mg) with or without atropine 1 hour before induction of anesthesia. The blood pressure and pulse rate were determined, and an intravenous infusion of 5 per cent dextrose in water (D5/W) was begun prior to induction of spinal anesthesia. The anesthetic agent and dose (lidocaine, 50 to 70 mg, or tetracaine, 8 to 14 mg) were determined by the clinical situation and the patient's physical condition. Following induc-

tion of subarachnoid block, the blood pressure and pulse rate were recorded at least every 5 minutes for 30 minutes, the time period of the study. The levels of anesthesia, 15 minutes after induction, ranged from T4 to T10.

These 100 patients were assigned to four groups for the purposes of this study. The regimens were: for Group I, infusion of minimal amounts of fluids (30 ml); Group 2, injection of mephentermine (30 mg) in the paraspinal muscles prior to administration of spinal anesthesia, and infusion of minimal fluids; Group 3, rapid infusion of D5/W (500 ml) over the 10- to 15-minute period as the spinal anesthesia was being performed, followed by infusion of 200 ml of 5 per cent dextrose in Ringer's lactate solution; Group IV, intramuscular injection of mephentermine (30 mg) and the infusion of fluids as for Group III. For this study, hypotension was defined as a 20 per cent decrease in mean arterial blood pressure (MABP, or diastolic pressure plus one third of the pulse pressure). Hypotension was treated by appropriate means.

In assessing the results, statistical significance was tested by the chi-square test; $P < 0.05$ was considered significant.

RESULTS

When fluids only (whether 30 or 700 ml) were given (Groups I and III), hypotension occurred in 11 of the 25 patients in each group. When therapy consisted of the injection of mephentermine plus an infusion of 30 ml of fluid (Group II), hypotension occurred significantly less frequently than in those patients who received only fluids, only six patients in this group being hypotensive. When mephentermine and an infusion of 700 ml of fluid were administered (Group IV), the incidence of hypotension was significantly lower than in any other group, only one patient of the group developing hypotension.

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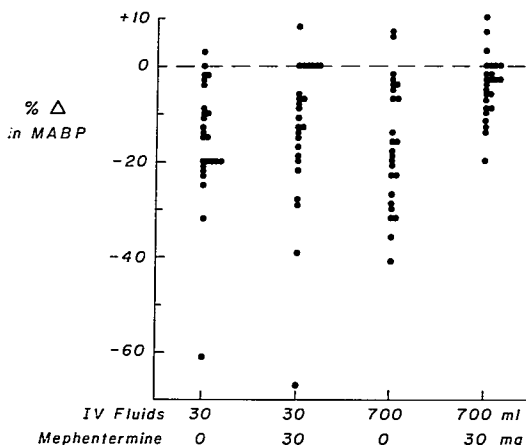


FIG. 1. Changes in mean arterial blood pressure (MABP) in 100 patients during TURP under spinal anesthesia.

The percentage changes in MABP in individual patients in each group are shown in figure 1. The range of percentage changes in MABP was greatest in the group receiving only 30 ml of fluid and least in the group receiving the combination of 30 mg of mephentermine and 700 ml of fluid. We found no correlation between hypotension and the level of anesthesia. Changes in pulse rate were minimal in all patients.

This experience provides a reliable basis for

administering, routinely, fluids and mephentermine in the prophylactic management of patients having spinal anesthesia for TURP. As with all routines, appropriate modifications should be kept in mind to enable one to respond to the unique requirements of the individual patient. This experience has confirmed for us the need and usefulness of subjecting everyday aspects of clinical practice to the test of a prospective study.

Circulation

SICK-SINUS SYNDROME The sick-sinus syndrome (SSS) consists of a persistent, marked sinus bradycardia with or without associated supraventricular tachyarrhythmia. Its clinical consequences were studied in 56 patients ranging in age from 26 to 92 years. The patients were grouped according to the severity of symptoms and the incidence of complicating episodes of tachycardia. More than half had conduction disturbances on the ECC that included first-degree A-V and bundle-branch block. Drug therapy with belladonna alkaloids and sympathomimetic amines was un-

rewarding in most cases. Electrical pacing was necessary for those patients who had histories of numerous syncopal episodes and those with congestive heart failure in whom digitalis therapy accentuated the bradycardia or heart block. Patients with intermittent bradycardia-tachycardia were usually managed with digitalis to slow the tachyarrhythmia, while electrical pacing was used during the bradycardiac episodes. (Rubenstein, J. J., and others: *Clinical Spectrum of the Sick Sinus Syndrome, Circulation* 46: 5-13, 1972.)